

**REMARKS UNDER 37 CFR § 1.111**

**Formal Matters**

Claims 10-13 are pending after entry of the amendments set forth herein.

Claims 14-15 are withdrawn from consideration.

Claims 10-13 were examined. Claims 10-13 were rejected. No claims were allowed.

Claims 10 and 13 are amended. Support for these amendments is found in the specification at, for example, page 7, beginning 4<sup>th</sup> full paragraph to page 8; and page 21, lines 1-15.

Support for new claims 16-18 is found at, for example, specification the paragraphs bridging pages 19-20 and pages 20-21, as well as in original claim 5.

Applicants respectfully request reconsideration of the application in view of the amendments and remarks made herein.

No new matter has been added.

**Rejection under §112, ¶2**

Claims 10 and 13 were rejected as being indefinite. Each of these rejections is addressed below.

Claim 10 was rejected for recitation of "useable for tissue repair". The claim is amended to recite "for use in tissue repair" as kindly suggested by the Examiner.

Claim 10 was also rejected for recitation of "having cell binding which is enhanced with respect to collagen". Applicants respectfully submit that this same language was found acceptable in 5 previously issued patents, each of which are based on applications to which the present application is related. See, e.g., US 5,958,428 (e.g., claims 1, 4, 6, and 10); US 5,635,482 (claim 1); US 5,674,848 (e.g., claim 1); and US 6,268,349 (e.g., claims 10, 13, and 15). Nevertheless, in an effort to expedite prosecution, applicants have amended claim 10 to recite that the peptide "having a domain that mimics collagen binding to cells".

Claim 13 was rejected for recitation of "treatment arthritis." Without conceding as to the grounds of the rejection, the claim is amended to recite that the composition is for "repair of bone, cartilage, tendons, ligaments, or muscle damage associated with arthritis" The damaged tissue can be bone, cartilage, tendons, ligaments, or muscles, as a result of arthritic disease.

Applicants request that each of the rejections of the claims under §112, ¶2 be withdrawn.

**Rejection under §112, ¶1 - Enablement**

Claim 13 was rejected on the grounds that, while being enabling for a peptide that mimics cell binding of collagen, does not reasonably provide enablement for treatment of arthritis. This rejection is traversed as applied, and as it may be applied to the pending claims.

Applicants first note that claim 13 has been clarified to state that the composition is for repair of bone, cartilage, tendons, ligaments, or muscle damage associated with arthritis.

Before addressing the particulars of the rejection, applicants respectfully note that the present application claims priority to U.S. application serial no. 08/859,610, now U.S. Pat. No. 5,958,428 ('428). The '428 patent includes claims directed to an apparatus for cartilage, tendon, and ligament repair (see, e.g., claim 4) and to an apparatus for bone repair (e.g., claim 6). Applicants thus respectfully submit that the present specification has already been deemed to satisfy all statutory requirements for patentability for such cartilage repair composition claims, include the enablement requirement of §112, ¶1

. Turning to the present rejection, the Office Action cites Manning in support of the unpredictable state of the art. Applicants respectfully note that Manning does not address peptide-based therapeutics, but rather focuses upon the stability of protein pharmaceuticals. Comparatively large proteins -- such as the examples cited by Manning including lysozyme, bGH, hGH, insulin, etc. (see page 903, col. 2) -- would be reasonably expected to meet with more challenges than the compounds of the present invention.

Moreover, Manning actually discusses how the problems of chemical and/or structural instability can be overcome or avoided (see, e.g., page 910, col. 2 to page 913, col. 1).

Russell is cited in the Office Action to further support the uncertainty in the art, in particular that the underlying cause of joint destruction leading to rheumatoid arthritis is unknown. Applicants submit that this point is moot in view of the clarification of the claim. The claims are directed to repairing tissue damage and not simply to treating arthritis.

The specification provides several examples showing interaction of cells with a peptide of the claims, including a peptide provided in a biocompatible implant such as a gel (see, e.g., specification page Examples 1- 6, pages 21 - 35). On page 21, lines 1-6, the specification describes that the claimed invention is useful in "cartilage repair for arthritis and other joint diseases and tendon repair." Muscle repair is also cited.

Applicants also submit herewith a copy of the declaration by Dr. Rajendra S. Bhatnagar, which declaration was filed in a parent application (USSN 08/278,878, now U.S. Pat. No. 5,635,482), and

provides a further example of the invention in which an implant of resorbable polymer having P15 is placed at a subcutaneous site in an animal model (Yucutan miniature swine). Dr. Bhatnagar's declaration further evidences that the peptides recited in the present claims provide for production of a well organized connective tissue, with abundant healthy fibroblasts, in an *in vivo* animal model. The peptide compositions of the invention encourage both cell migration and cell differentiation.

Also submitted herewith is a copy of the declaration by Andrew J. Tofe, Ph.D., which declaration was filed in a parent application (USSN 08/278,878, now U.S. Pat. No. 5,635,482), and provides a further example of the invention in which P15 on hydroxylapatite was used to treat a bony defect site in an animal model (NZW rabbits). Dr. Tofe's declaration further evidences that the peptides recited in the present claims provide for repair of bone tissue.

In view of the above, applicants respectfully request withdrawal of this rejection.

**Obviousness-type Double Patenting**

Claims 10-13 were rejected under the doctrine of obviousness-type double patenting in view of certain claims of US Pat. Nos. 5,354,736; 5,635,482; and 5,958,428. Without conceding as to the correctness of this ground of rejection, the rejection is rendered moot by the filing of the Terminal Disclaimer, submitted with this response.

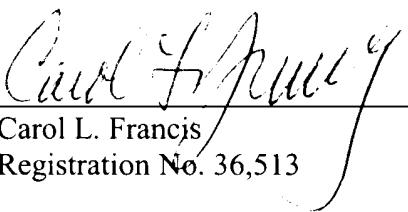
Conclusion

Applicant submits that all of the claims are in condition for allowance, which action is requested. If the Examiner finds that a telephone conference would expedite the prosecution of this application, please telephone the undersigned at the number provided.

The Commissioner is hereby authorized to charge any underpayment of fees associated with this communication, including any necessary fees for extensions of time, or credit any overpayment to Deposit Account No. 50-0815, order number UCAL-223CON2.

Respectfully submitted,  
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